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**APPLICATION FOR LETTERS PATENT**

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**MANNEQUIN HAVING DRIVE SECTION**

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MANNEQUIN HAVING DRIVE SECTION

BACKGROUND OF THE INVENTION

Field of the Invention

5           The present invention relates to a mannequin that is to be installed in a show window, at a point of sale, in the vicinity of merchandises or the like, and particularly to a mannequin having a drive section for driving joints installed in the arms, etc. of the mannequin.

10   Description of the Related Art

          The conventional mannequin to be installed in a show window, or at a point of sale or in the vicinity of merchandises is the one being worn with merchandises, such as dresses and shoes, and displayed in a static prefixed pose  
15   while keeping such a pose, which is chosen at the time of the placement. The arms of such a mannequin are generally provided with joints with which the arms can take motions similar to those behaved by human beings. Those joints can be moved by workers, for example by bending arms, in order  
20   to set the mannequin in a fixed pose. Whenever it is desired to change the pose of a mannequin, such arms are moved by workers to be set in a different pose. Whereas, since the pose of a mannequin that basically has no joints cannot be changed, it has been required to prepare for a  
25   mannequin of the different type whenever it is desired to

change poses.

However, it has been a troublesome job to change poses of a mannequin frequently, since workers have to either move the arms or replace the mannequin by a different one each time the pose has to be changed as described above. In addition, such a conventional mannequin to be displayed in a static state could have obtained less interest of passers and/or purchasers and is not so conspicuous. Further, with such a mannequin whose motion is fixed, although it is possible to sense the feeling for a dress when it is actually worn, it is not feasible to realize how nice the dress is in the moving state. Hence, up till today, a mannequin capable of obtaining higher interests of passers and the like and of effectively appealing merchandises to them has been desired to use.

Based on the above-mentioned disadvantage, the present invention is intended to provide a mannequin having a drive section for driving the joints so that the mannequin can move in accordance with a predetermined motion pattern.

#### SUMMARY OF THE INVENTION

In order to achieve the above-mentioned object of the present invention, the mannequin to be installed in a show window or the like according to the present invention com-

prises a body comprising at least a torso and arms, a plurality of joints installed at least in the arms and adapted to be operable in a predetermined direction, a drive section connected to the joints to drive the respective joints, a control section connected to the drive section and capable of optionally controlling the movements of the respective joints by means of controlling the drive section, and a storage section connected to the control section to store instructions corresponding to a predetermined movement pattern for the motion of the body,

wherein the control section controls the drive section on the basis of the instructions stored in the storage section so as to ensure that the body moves to follow the movement pattern in accordance with the instructions.

The drive section may be constituted in either a pneumatic driving system comprising an air compressor, a pressure control unit and a valve unit, or an electric driving system comprising a motor and a power transmission mechanism.

The control section is connected to an electrical communication network, whereby it may be operated remotely via said electrical communication network.

Alternatively, the storage section may be connected to an electrical communication network and connected to the control section via said electrical communication net-

work.

Further, a sensor capable of sensing the presence of passers may be placed in the vicinity of the mannequin.

The sensor may be connected to the control section to  
5 thereby control the mannequin so that the mannequin can show its motions toward the sensed passers when the sensor has sensed that the passers are stopping for a period longer than a predetermined period of time.

Note that the sensor(s) may be placed in any one of  
10 the front, the rear, the right and left sides of the position where the mannequin is placed, or a plurality of sensors may be placed in the plural sides of said position.

The movement pattern corresponding to the instructions stored in the storage section may be a movement pattern that is a mimic of the typical poses behaved by fashion models.  
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With the means as described above, the following operations will be executable. Namely, the mannequin according to the present invention can realize freely and easily  
20 to move so that it follows a predetermined movement pattern. Since the mannequin can be operated continuously, it can have higher attractive influence on passers, allowing to realize effective display of merchandises and the like. Furthermore, it will be also possible to let the mannequin  
25 show a desired pose more easily by means of remote opera-

tion whenever it is desired. Further thereto, it will be also possible to show the best pose of a mannequin for passers who have paid attention thereto. In such a manner, the mannequin according to the present invention can have  
5 more attractive influence on customers of merchandises such as dresses and the like. Still further, since the mannequin can move with following the typical motions behaved by fashion models, it will be possible to let customers feel the worn merchandises like dresses as it is  
10 more beautiful.

#### BRIEF DESCRIPTION OF THE DRAWINGS

FIG. 1 is a schematic illustration of the mannequin having a drive section according to the first example for  
15 the present invention;

FIG. 2 is a schematic illustration of the mannequin having a drive section according to the second example for the present invention; and

FIG. 3 is a schematic illustration of the mannequin  
20 having a drive section according to the third example for the present invention.

#### PREFERRED EMBODIMENT OF THE INVENTION

The embodiments according to the present invention  
25 will now be explained with referring to the examples il-

lustrated in the appended drawings. FIG. 1 is a drawing schematically illustrating the mannequin according to the first example for the present invention. A body of this illustrated mannequin according to the present invention is constituted mainly with a head 1, a torso 2 and arms 3. Depending upon the usage of the mannequin, it is naturally accepted even though the body 1 has no head 1. Each arm 3 has joints 4, 5 and 6 at the positions of its shoulder, elbow and wrist, respectively, so that the arm 3 can be moved in given directions, for example, so as to show similar motions to those behaved by human beings. Note that the joint may naturally be installed in a neck 7 functioning as a part connecting the head 1 and the torso 2, and a lower back, or may be installed only in a shoulder. The joints may be further installed in the parts corresponding to the joints of fingers. The positions where those joints are installed and the numbers to be installed may be optionally determined in consideration of requirements for the mannequin, the use pattern, the production cost, etc.

A drive section 10 for driving the joints is connected to the joints. In the example illustrated in FIG. 1, an embodiment in which the drive section 10 is constituted in a pneumatic driving system is shown. In this example, an air cylinder or the like is provided in the

joint in order to cause the arm to be driven. Also, an air flow path (shown with broken lines in FIG. 1) is formed in each of the air cylinders. The drive section 10 includes an air compressor 101 for compressing air to increase air pressure, a pressure control unit for controlling the pressure caused by the air compressor 101 to a predetermined pressure, and a valve unit 103 for controlling incoming/outgoing air flow rates into/from the air cylinders. Note that, although the drive section constituted in a pneumatic driving system is illustrated in FIG. 1, the drive section according to the present invention is not limited to this system. Needless to say, various types of driving means capable of driving the joints are applicable. For example, the drive section may be any of driving systems employing not only air pressure but also hydraulic power, water pressure and the like as well as electric driving systems comprising a power transmission mechanism and the like, which includes a motor, and gears and belts both adapted to transmit the rotation of a motor to the joints.

The mannequin according to this invention is connected to the above-described drive section 10 and includes a control section 11 capable of optionally controlling the respective joints 4, 5 and 6. In case of the drive section of the pneumatic driving system shown in



FIG. 1, the control section 11 is connected to the valve unit 103 in the drive section 10 to control the valve operation of the valve unit 103, thereby optionally controlling the operations of the joints 4, 5 and 6. Specifically, in case it is desired to operate the joint 4 in the shoulder to thereby cause the arm to be raised, the control section 11 controls the valve of the valve unit 103 installed in the air flow path, which is connected to the air cylinder provided in the joint 4. With this control, air pressure is provided into an air cylinder to drive the joint 4. The same control is carried out for the respective joints, whereby the same motions as those behaved by human beings are realized.

Next, a storage section 12 is connected to the control section 11. In the storage section 12, instructions corresponding to a predetermined movement pattern for the motions of the mannequin body are stored. Concretely speaking, the storage section 12 is a storage device capable of storing instructions for controlling the drive section 10 that drives the respective joints to operate in order to realize the movement of the arms 3 in accordance with a series of movement pattern. The examples of the storage section include not only a semiconductor memory but also various storage devices, such as magnetic disks and optical disks. Note that, specifically, the instruc-

tion is a program corresponding to the movement pattern and the control section 11 controls the drive section 10 in accordance with the program stored in the storage section 12 to thereby cause the respective joints 4, 5 and 6 to operate.

Now, an explanation for the motions behaved by the mannequin constituted as described above according to this invention will be made in the following. When an operator or the like starts to cause the mannequin to show its motions, the air compressor 101 in the drive section 10 is actuated, and the pressure control unit 102 controls air pressure at a predetermined level. Then, instruction corresponding to a predetermined movement pattern stored in the storage section 12 is selected. In accordance with the selected instruction, for example, an instruction to show the best motion of a fashion model, the control section 11 controls the valve unit 103 in the drive section 10. The movement of the mannequin that follows a predetermined movement pattern is realized by opening or closing the valve in the valve unit 103 to thereby operate the air cylinders respectively installed in the joints 4, 5 and 6. The storage section 12 can store a plurality of instructions those which correspond to a plurality of movement patterns. It is naturally possible for the storage section to select a predetermined movement pattern from the plu-

rality of instructions being stored and to operate at random automatically.

Therefore, with the mannequin having a drive section according to this invention, which is worn with merchandises, such as a dress, bags and accessories, and placed in a show window, at the point of sale, in the vicinity of merchandises or the like, it becomes unnecessary for a worker to go out and change the pose of the mannequin, and the attractive influence of the mannequin on passers and customers will be enhanced since the mannequin can automatically move by itself. In addition, since customers can see the appearance of a worn dress when the arms of mannequin are moved, the display, introduction and advertisement of merchandises in further effective manner will be achieved with the mannequin according to this invention. Still further, various movement patterns can be stored in the storage section 12 as far as the mechanical operation is executable. Therefore, for example, typical poses of fashion models and a series of poses of famous models like super models can be imitated to store in the storage section 12, which makes customers feel merchandises such as dresses as they are more beautiful. Regarding the imitation of such poses of models, it is feasible to introduce the movements of models into a computer or the like by means of various technologies such as motion capture and,

for example, to then convert the introduced movements into instructions that are applicable to the control section according to this invention.

Next, a second example for the present invention will be explained with referring to FIG. 2. FIG. 2 is a schematic illustration of the mannequin according to the second example for this invention. In this drawing, the components with the same reference symbols as those in FIG. 1 represent the same components, respectively. Therefore, explanation for the overlapped components is omitted. In the mannequin according to the second example for this invention, the control section 11 is connected to an electrical communication network 15 so that the movements of the mannequin can be controlled via the electrical communication network 15.

With such a manner that the control section 11 is connected to an electrical communication network 15, for example, the internet, the intranet and the like, it becomes feasible to remotely operate the mannequin. That is, for example, if an operation center 20 that manages the mannequin is structured on the electrical communication network 15, the mannequin can be controlled from a remote place easily and speedily without need to reach the location where the mannequin is placed. Also, it is possible to connect the storage section as well to the electrical

communication network 15 to thereby connect the storage section 12 to the control section 11 via the network. In this case, the storage section may be constructed with a file server or the like, which makes it possible to record  
5 a large amount of movement patterns into the storage section 12 without paying attention to the storing capacity and the like. In addition, since the recording and modification of the movement patterns by the operation from a remote place will be realized when the storage section 12  
10 is structured on the electrical communication network, it becomes feasible to immediately react to poses in fashion and the like. Note that the connection between the control section 11 and the electrical communication network 15 is not limited to a wired connection. Paying attention to the  
15 drawing-around of the wiring, it is naturally acceptable to structure the connection in a wireless manner.

In case of having a plurality of mannequins, for example, in a store, they can be controlled in the block at the operation center 20 if the respective control sections  
20 11 are connected to an electrical communication network 15. Note that even though the mannequins are placed in stores locating at different places far from one to another, it is feasible to interrelate them and to control them simultaneously. When the storage section 12 is struc-  
25 tured on an electrical communication network 15, it be-

comes unnecessary to provide the storage section 12 to each mannequin, which makes possible to reduce the number of the components. In addition, operations to manage the movement patterns will be diminished since those operations can be carried out at one place in a concentrative manner.

Next, the mannequin according to a third example for this invention is schematically illustrated in FIG. 3. In this drawing, the components with the same reference symbols as those in FIG. 1 represent the same components, respectively. Therefore, explanation for the overlapped components is omitted. In this example, sensors 16 capable of sensing the presence of passers are further connected to the control section 11.

As shown in FIG. 3, a plurality of sensors 16 are arranged in front of a show window where the mannequin according to this invention is placed. These sensors are adapted to sense passers 18 who have stopped in front of the show window. Specific example of the sensor 16 includes a sonar sensor, an optical sensor, a thermal sensor, and other sensors of various types as far as they can sense passers. The sensor 16 may be a voice sensor that reacts to the voice of passers 18. Note that a plurality of sensors 16 are arranged in the example shown in this drawing, one sensor may be accepted naturally if it is

capable of sensing the positions of passers 18 over a wide range. That is, it is sufficient to arrange the sensor(s) 16 at one or more of the front, the rear, and the right and left sides of the location where the mannequin is placed. The required number in total and location to be arranged can be chosen appropriately depending on the performance of sensors as far as it is possible to sense the positions of passers 18 with them. Alternatively, the sensor 16 may be installed naturally in the mannequin itself.

10 Note that the passers mentioned herein include all peoples who are looking at a dress and a bag put on the mannequin, such as crowds and customers.

In the example shown in FIG. 3, when a centrally-arranged sensor has sensed a passer 18 who has paid

15 his/her attention to the mannequin and is stopping for a period longer than a prefixed period of time, for example, for 5 seconds, the control section 11 makes a judgment that the passer 18 who is standing in the center has paid his attention to the mannequin and subsequently controls

20 the drive section 10 in accordance with instructions stored in the storage section 12 so that the mannequin starts to show a given movement pattern such as the best pose toward the center. In case the other sensor has sensed that a passer has stopped for a period longer than

25 a prefixed period of time, the control section 11 controls

the drive section 10 so that the mannequin starts to show its motions toward the passer sensed by the sensor. Note that, although the control section 11 is not connected to an electrical communication network in the example shown in FIG. 3, when this example is made in combination with the second example for this invention, it is naturally feasible to remotely operate the mannequin via the electrical communication network and to structure the storage section 12 on the electrical communication network.

10       According to this example, it becomes feasible to cause the mannequin to show its motions toward a passer who has paid his/her attention to the mannequin and stopped. As a result, dresses and bags worn on the mannequin can be displayed and built up in a more effective  
15       manner, and the mannequin can be a mannequin having enhanced attractive influence on the customers.

      Note that the mannequin having a drive section according to this invention is not limited to the above-illustrated examples and various modifications may be made  
20       naturally without departing from the gist of the present invention. For example, although the mannequin having a head is embodied in the illustrated example, the mannequin according to this invention may be embodied in the form of a mannequin without a head. If it is desired, not only the  
25       bust but also the lower part of the body may naturally be



constituted so as to be similar to the bust of the mannequin according to this invention. Further, the structure of the drive section described above is only explanatory, and various arts may be employed as far as it can operate  
5 the joints in the arms and the like.

As explained above, according to the mannequin having a drive section of this invention, unlike mannequins simply worn with merchandises and placed in the static state, it is made feasible to operate the mannequin freely and  
10 easily so that it moves in accordance with a predetermined movement pattern, which allows to exert such an excellent effect that merchandises can be displayed and built up in an effective manner.

Furthermore, when the mannequin is provided with a  
15 sensor, an interactive mannequin that reacts to passers and the like can be realized since it is made feasible to cause the mannequin to show its motions toward passers and the like who are looking at it.